

REMARKS

1. Finality of Office Action

Applicant respectfully submits that the finality of the Office Action dated June 5, 2007 is premature. According to MPEP § 706.07(a), a second or subsequent action on the merits cannot be made final if the action includes a rejection of a claim that has not been amended and the rejection is based on newly cited art that was not submitted in an information disclosure statement. Applicant did not amend any claims in the prior Reply that was submitted on March 10, 2007 (responsive to the Office Action of January 10 2007), and the Examiner cited U.S. Patent No. 4,577,561 to Perry for the first time in the instant Office Action. Accordingly, Applicant respectfully requests that the finality of the rejections in the latest Office Action be withdrawn.

2. Claim Rejections - 35 U.S.C. § 103

Claims 1-8, 10, 11, 14 and 15 have been rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 4,962,708 to Synder in view of U.S. Patent No. 6,867,512 to Delaire and in further view of U.S. Patent No. 6,546,873 to Andrejkovics and in further view of U.S. Statutory Invention Registration No. H1068 to Huhmann and in further view of U.S. Patent No. 4,577,561 to Perry.

Independent claim 1 is directed to a detonation initiator and recites the features of a linear actuator that is activated by the discharging of a capacitor. The claimed capacitor is charged with an electrical pulse that is received by the detonation initiator.

As claimed, discharging of the capacitor occurs when the capacitor reaches a charge threshold. The charge on the capacitor is monitored by an electrical circuit that includes a digital logic gate configured as a comparator to compare a representation of the charge of the capacitor with a reference voltage established from the electrical pulse used to charge the capacitor.

Also, claim 1 recites that "all operational power for the electrical circuit is derived from the electrical pulse." Thus, the claimed electrical pulse charges the capacitor and establishes the reference voltage that is used by the comparator to determine when to discharge the capacitor through the linear actuator. In this regard, no additional power supply sources are required to establish a reference point for comparison to the voltage of the claimed capacitor and to initiate a detonation.

Further, the claimed arrangement advantageously allows for sufficient charge to be stored by the capacitor even when a less than optimal electrical pulse can be delivered to the detonation initiator (e.g., a reduction in pulse voltage caused by degraded batteries of a radio receiver assembly used to supply the pulse). Even in this situation, the stored charge may be converted into enough mechanical energy to initiate a desired detonation. These features have a particular advantage when the electrical pulse is of limited duration, such as when U.S. military personnel use a standard issue radio receiver to supply the electrical pulse and the batteries of the receiver start to degrade. As a result of the claimed invention, soldiers in the battlefield may find a reduced reliance on fresh batteries when attempting to initiate a detonation, which is a distinct improvement in the art.

The Examiner relies on Andrejkovics, Huhmann, and Perry for disclosing the electrical circuitry components of the claimed invention. However, even if one were to assume that the references are properly combinable, the specifically selected arrangement recited in claim 1 would not result. In particular, none of the references cited by the Examiner, alone or in combination, disclose the claimed digital logic gate configured as a comparator for monitoring the charge on the capacitor.

In the passage of Andrejkovics cited by the Examiner at column 7, lines 45-62 and in figure 5, there is no disclosure of that which is claimed. In this passage, Andrejkovics describes components that require a power source (e.g., a microprocessor-based controller and an RF receiver, among other components) and a firing circuit that has no relevancy as a teaching description when compared to the claimed electrical circuit.

The Examiner further relies on the switching transistors 8 and 10, and the CMOS logic 6 as shown in Huhmann for teaching a "capacitive charging circuit" (Office Action at page 3, paragraph 6). But the circuitry in Huhmann is clearly powered by a battery. Moreover, Huhmann's transistors and logic circuit are used to charge the capacitor to the battery voltage and discharge the capacitor in accordance with a sequence of control events occurring in a 50 msec window (see column 2, lines 8-33). Missing from Huhmann is a disclosure of an electrical circuit that includes a digital logic gate that is configured as a comparator to compare a representation of the charge of the capacitor with a reference voltage established from the electrical pulse used to charge the capacitor, as claimed.

It is also apparent that Huhmann's reliance on charging the capacitor to the battery voltage is an explicit teaching away from the claimed subject matter, as will be discussed later in this Reply.

The logic circuit of Huhmann can also be used to detect malfunctioning of the fuze and, if needed, discharge the capacitor to "DUD the fuze" (see column 2, lines 44-47). This is not particularly germane to the claimed invention since the claimed circuitry is used to monitor the capacitor's charge and discharge the capacitor through the actuator's coil to effectuate detonation when the charge reaches a threshold.

The Examiner does not articulate which element of claim 1 is allegedly disclosed by Perry. Nevertheless, it will be immediately recognized that adding Perry to the combination of Synder, Delaire, Andrejkovics, and Huhmann, as set forth in the earlier action, does not result in a combination that arrives at the claimed invention. In other words, Perry does not cure the deficiencies of the other references.

Perry discloses a digital time fuze. In effect, Perry runs a clock that determines when an output pulse is to be supplied to a detonator (see column 3, line 66 to column 4, line 25). The Perry logic circuit operates in conjunction with a counter to specify the exact time at which to supply the output pulse (see column 4, lines 49-56). Perry's timing circuit is not instructive of the claimed arrangement, which does not operate on time constraints, but monitors the capacitor's charge and discharges the capacitor when the charge reaches a threshold. In particular, missing from Perry is the disclosure of a

digital logic gate configured as a comparator to compare the capacitor's charge with a reference voltage established from the electrical pulse that is also used to charge the capacitor, as claimed.

Since none of the references disclose that which is claimed, the claimed invention would not result even if the proposed combination were made.

In addition to the fact that the proposed combination does not arrive at the claimed invention, the proposed combination is not proper since at least Huhmann and Perry teach away from the claimed subject matter.

In Huhmann, it is clear that a battery is used to provide electrical energy to charge the capacitor and operate the remaining circuitry. Huhmann explicitly states that the capacitor "must fully charge to the battery voltage within 50 msec" (column 2, lines 30-33, emphasis added). In contrast to Huhmann's reliance on batteries, claim 1 specifies that "all operational power for the electrical circuit is derived from the electrical pulse." As such, the teachings of Huhmann would lead a skilled person down a path divergent from the claimed invention since combining Huhmann with the remaining references would actually increase the combination's reliance on batteries.

It appears that the Examiner attempts to salvage the combination by adding Perry, which the Examiner alleges would remove the need for a battery. But this approach is not logical. Rather, a skilled artisan presented with a reference that "must" rely on a battery (Huhmann) and a reference that reduces a need for a battery (allegedly Perry) would not attempt their combination. Also, this approach is not supported in law. As set forth in the MPEP at section 2141.02, a "prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention" (emphasis present in the MPEP). Therefore, portions of Huhmann that teach away from the claimed subject matter cannot be ignored or preempted by the addition of Perry to the combination.

Also, Perry discloses a timer-based detonation approach. The claimed approach is not timer-based, but is implemented to be as responsive as possible to an electrical input pulse. Therefore, Perry teaches away from the claimed invention.

Accordingly, neither Huhmann nor Perry are properly combinable with the other cited references to make a valid obviousness rejection of claim 1.

For the reasons stated above, claim 1 and the claims depending from claim 1 recite patentable subject matter.

Claim 16 has been rejected under 35 U.S.C. § 103(a) over Synder, Delaire, Andrejkovics, and Huhmann, and further in view of U.S. Patent No. 3,792,663 to Schneider. Claim 16 depends from claim 1 and is considered allowable for at the reasons set forth above.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

3. Conclusion

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned representative to expedite prosecution of the present application.

If there are any fees resulting from this communication, please charge same to our Deposit Account No. 18-0988, our Order No. 04E007.

Respectfully submitted,

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